AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An electrolytic capacitor comprising:

a valve metal element for an anode including a capacitor forming part and an electrode lead part;

a dielectric oxide film provided on a surface of the valve metal element for an anode;

a solid electrolyte layer provided on the dielectric oxide film; and

a charge collecting element for a cathode provided on the solid electrolyte layer,

wherein at least one through hole is formed in the electrode lead part of the valve metal element for an anode to expose a core of the valve metal element to an outside of the electrolytic capacitor.

2. (Currently Amended) The electrolytic capacitor according to claim 1,

wherein the through hole is filled with an electrically conductive resin composition containing metal powder and a thermosetting resin, and

wherein the resin composition is connected to the core of the valve metal element.

3. (Currently Amended) The electrolytic capacitor according to claim 2, wherein a diameter of the through hole is from 0.5 to 2.0 times a thickness of the valve metal element for an anode.

4. (Currently Amended) The electrolytic capacitor according to claim 1,

wherein a single electrically conductive particle or a single electrically conductive fiber is disposed within the through hole, and

wherein the particle or fiber contacts with at least a part of the core of the valve metal element in the through hole.

5. (Original) The electrolytic capacitor according to claim 4, wherein the single electrically conductive particle or the single electrically conductive fiber pierces the electrode lead part of the valve metal element for an anode.

6. (Original) The electrolytic capacitor according to claim 1, wherein at least one electrically conductive particle contacts with the core of the valve metal element for an anode in the electrode lead part of the valve metal element for an anode.

7. (Original) The electrolytic capacitor according to claim 6, wherein at least a part of the electrically conductive particle is coated with a thermosetting resin.

8. (Original) The electrolytic capacitor according to claim 1, wherein an electrically conductive resin composition containing metal powder and a thermosetting resin is applied to a surface of the electrode lead part of the valve metal element for an anode.

9. (Withdrawn - Currently Amended) A circuit board with a built-in capacitor comprising an electrolytic capacitor which is disposed within an electrically insulating layer, and connected to a wiring layer with a conductive adhesive,

wherein the electrolytic capacitor comprises:

a valve metal element for an anode including a capacitor forming part and an electrode lead part;

a dielectric oxide film provided on a surface of the valve metal element for an anode;

a solid electrolyte layer provided on the dielectric oxide film; and

a charge collecting element for a cathode provided on the solid electrolyte layer,

wherein at least one through hole is formed in the electrode lead part of the valve metal element for an anode to expose a core of the valve metal element to an outside of the electrolytic capacitor.

10. (Withdrawn - Currently Amended) The circuit board with a built-in capacitor according to claim 9,

wherein the through hole formed in the electrolytic capacitor is filled with an electrically conductive resin composition containing metal powder and a thermosetting resin, and

wherein the resin composition is connected to the core of the valve metal element.

11. (Withdrawn - Currently Amended) The circuit board with a built-in capacitor according to claim 10, wherein a diameter of the through hole is from 0.5 to 2.0 times a thickness of the valve metal element for an anode.

12. (Withdrawn - Currently Amended) The circuit board with a built-in capacitor according to claim 9,

wherein a single electrically conductive particle or a single electrically conductive fiber is disposed within the through hole formed in the electrolytic capacitor, and

wherein the particle or fiber contacts with at least a part of the core of the valve metal element in the through hole.

13. (Withdrawn) The circuit board with a built-in capacitor according to claim 12, wherein the single electrically conductive particle or the single electrically conductive fiber pierces the electrode lead part of the valve metal element for an anode.

14. (Withdrawn) The circuit board with a built-in capacitor according to claim 9, wherein at least one electrically conductive particle contacts with the core of the valve metal element for an anode in the electrode lead part of the valve metal element for an anode of the electrolytic capacitor.

15. (Withdrawn) The circuit board with a built-in capacitor according to claim 14, wherein at least a part of the electrically conductive particle is coated with a thermosetting resin.

16. (Withdrawn) The circuit board with a built-in capacitor according to claim 9, wherein an electrically conductive resin composition containing metal powder and a thermosetting resin is applied to a surface of the electrode lead part of the valve metal element for an anode of the electrolytic capacitor.

17. (Withdrawn - Currently Amended) The circuit board with a built-in capacitor according to claim 9, wherein wiring layers are ~~placed~~ disposed on both surfaces of the electrically insulating layer and are electrically connected to one another through one or more ~~an~~ inner vias ~~via(s)~~ which ~~is~~ are formed in the electrically insulating layer.

18. (Withdrawn) The circuit board with a built-in capacitor according to claim 9, wherein the electrically insulating layer comprises an inorganic filler and a thermosetting resin.

19. (Withdrawn - Currently Amended) The circuit board with a built-in capacitor according to claim 17, wherein the one ore more inner vias ~~via is~~ are formed of a mixture of electrically conductive powder and a thermosetting resin.

20. (Withdrawn) The circuit board with a built-in capacitor according to claim 10, wherein the metal powder contained in the electrically conductive resin composition that fills the through hole formed in the electrolytic capacitor is made of the same material as that of an electrically conductive filler contained in the electrically conductive adhesive.

21. (Withdrawn - Currently Amended) The circuit board with a built-in capacitor according to claim 17, wherein the one ore more inner ~~via is~~ vias are disposed so that ~~it~~ the one or more inner vias align ~~aligns~~ with the through hole formed in the electrolytic capacitor.

22. (Withdrawn - Currently Amended) The circuit board with a built-in capacitor according to claim 21, wherein the electrically conductive powder contained in a mixture that

constitutes the one or more inner ~~via~~ vias is made of the same material as that of a metal powder contained in an electrically conductive resin composition which fills the through hole formed in the electrolytic capacitor.

23. (Withdrawn - Currently Amended) The circuit board with a built-in capacitor according to claim 9,

wherein [[:]] a semiconductor chip is further included, the semiconductor chip being electrically connected to the electrolytic capacitor disposed within the electrically insulating layer; and

wherein the wiring layer is connected to an external electrode through ~~the~~ an inner via formed in the electrically insulating layer.

24. (Withdrawn - Currently Amended) The circuit board with built-in capacitor according to claim 9,

wherein at least one component selected from the group consisting of a semiconductor chip, another capacitor, and an inductor is disposed within the electrically insulating layer within which the electrolytic capacitor is disposed or within another electrically insulating layer, and

wherein the component is electrically connected to a wiring layer.

25. (Withdrawn) The circuit board with a built-in capacitor according to claim 23, wherein the semiconductor chip is a switching element or a microprocessor.

26. (Withdrawn - Currently Amended) A switching power supply module comprising a switching element, a capacitor, and an inductor which are electrically connected, wherein:

the capacitor is an electrolytic capacitor comprising:

a valve metal element for an anode including a capacitor forming part and an electrode lead part;

a dielectric oxide film provided on a surface of the valve metal element for an anode;

a solid electrolyte layer provided on the dielectric oxide film; and

a charge collecting element for a cathode provided on the solid electrolyte layer,

wherein at least one through hole is formed in the electrode lead part of the valve metal element for an anode to expose a core of the valve metal element to an outside of the electrolytic capacitor, ~~and~~

wherein the capacitor is disposed within an electrically insulating layer and connected to a wiring layer with an electrically conductive adhesive[[;]], and

wherein the wiring layer is connected to an external electrode through ~~an~~ one or more inner ~~via(s)~~ vias formed in the electrically insulating layer.

27. (Withdrawn - Currently Amended) The switching power supply module according to claim 26, ~~which is~~ wherein the switching power supply module is a DC/DC converter.

28. (Withdrawn - Currently Amended) A microprocessor module comprising at least one microprocessor which is electrically connected to a capacitor, wherein:

the capacitor is an electrolytic capacitor comprising:

a valve metal element for an anode including a capacitor forming part and an electrode lead part;

a dielectric oxide film provided on a surface of the valve metal element for an anode;

a solid electrolyte layer provided on the dielectric oxide film; and

a charge collecting element for a cathode provided on the solid electrolyte layer,

wherein at least one through hole is formed in the electrode lead part of the valve metal element for an anode to expose a core of the valve metal element to an outside of the electrolytic capacitor, ~~and~~

wherein the capacitor is disposed within an electrically insulating layer and connected to a wiring layer with an electrically conductive adhesive, [[;]] and

wherein the wiring layer is connected to an external electrode through ~~an~~ one or more inner ~~via(s)~~ vias formed in the electrically insulating layer.

29. (Withdrawn - Currently Amended) A microprocessor module comprising at least one microprocessor and a circuit board with a built-in capacitor in which an electrolytic capacitor is disposed within an electrically insulating layer and electrically connected to a wiring layer, wherein:

the capacitor is an electrolytic capacitor comprising:

a valve metal element for an anode including a capacitor forming part and an electrode lead part;

a dielectric oxide film provided on a surface of the valve metal element for an anode;

a solid electrolyte layer provided on the dielectric oxide film; and

a charge collecting element for a cathode provided on the solid electrolyte layer,

wherein at least one through hole is formed in the electrode lead part of the valve metal element for an anode to expose a core of the valve metal element to an outside of the electrolytic capacitor, and

wherein the microprocessor is electrically connected to the wiring layer of the circuit board with [[a]] the built-in capacitor.

30. (Withdrawn) The microprocessor module according to claim 28, wherein the electrolytic capacitor is arranged just below the microprocessor.

31. (Withdrawn) A method for producing an electrolytic capacitor comprising:

producing an electrolytic capacitor unit by a method including:

forming a dielectric oxide film by oxidizing a surface of a valve metal element for an anode which includes a capacitor forming part and an electrode lead part; and

forming a solid electrolyte layer on the dielectric oxide film, followed by forming a charge collecting element for a cathode on the solid electrolyte layer; and

forming a through hole(s) in the electrode lead part of the valve metal element for an anode of the obtained electrolytic capacitor unit.

32. (Withdrawn) A method for producing an electrolytic capacitor comprising:

forming a dielectric oxide film by oxidizing a surface of a valve metal element for an anode which includes a capacitor forming part and an electrode lead part;

forming a through hole(s) in the electrode lead part of the valve metal element for an anode; and

forming a solid electrolyte layer on the dielectric oxide film, followed by forming a charge collecting element for a cathode on the solid electrolyte layer, in the stated order.

33. (Withdrawn) The method according to claim 31, which further comprises:

preparing an electrically conductive resin composition containing metal powder and an uncured thermosetting resin;

filling with the electrically conductive resin the through hole(s) formed in the electrode lead part of the valve metal element for an anode; and

connecting the electrically conductive resin composition to the core of the valve metal element by a heat treatment.

34. (Withdrawn) The method according to claim 33, which further comprises pressurizing the electrode lead part of the valve metal element for an anode after filling the through hole(s) with the electrically conductive resin composition.

35. (Withdrawn) The method according to claim 31, wherein through hole(s) is formed by disposing at least one electrically conductive particle within the electrode lead part of the valve metal element for an anode of the electrolytic capacitor unit, by placing the particle on the electrode lead part and then pressurizing so as to pierce the electrode lead part with the particle, the particle diameter being larger than the thickness of the valve metal element for an anode.

36. (Withdrawn) The method according to claim 31, wherein through hole(s) is formed by disposing at least one electrically conductive fiber within the electrode lead part of the valve metal element for an anode of the electrolytic capacitor unit, the fiber being longer than thickness of the valve metal element for an anode.

37. (Withdrawn) The method according to claim 31, wherein:

the through hole is formed by:

forming a stack by stacking a plurality of the electrolytic capacitor units in a thickness direction; and

piercing the electrode lead parts of the valve metal elements for an anode of electrolytic capacitor units with at least one electrically conductive fiber, the fiber being longer than the thickness of the stack of the electrolytic capacitor units; and

the stack is separated into a piece of electrolytic capacitor by cutting the electrically conductive fiber.

38. (Withdrawn) The method according to claim 31, which further comprises bringing at least one electrically conductive particle into contact with the core of the valve metal for an anode, by disposing the particle on the electrode lead part of the valve element for an anode followed by pressurization.

39. (Withdrawn) The method according to claim 31, which further comprises:

bringing at least one electrically conductive particles into contact with the core of the valve metal element for an anode, by disposing an electrically conductive resin composition containing the particle and an uncured thermosetting resin on the electrode lead part of the valve metal element followed by pressurization; and

bonding the electrically conductive resin composition to the electrode lead part of the valve metal element for an anode by a heat treatment.

40. (Withdrawn) The method according to claim 31, which further comprises:

applying an electrically conductive resin composition containing metal powder and a thermosetting resin to the electrode lead part of the valve metal element for an anode; and

bonding the electrically conductive resin composition to the electrode lead part of the valve metal element for an anode by a heat treatment.

41. (Withdrawn) A method producing a circuit board with a built-in capacitor comprising:

preparing a first circuit board in which a wiring layer is formed in a predetermined wiring pattern on a surface of an electrically insulating layer;

preparing an electrically conductive adhesive containing an electrically conductive filler and an uncured thermosetting resin;

preparing a sheet member formed of an thermosetting resin composition containing an uncured thermosetting resin and an inorganic filler, as an electrically insulating substrate;

applying the electrically conductive adhesive to a predetermined position of a surface of the wiring layer of the first circuit board;

fixing an electrolytic capacitor to the first circuit board by disposing the capacitor on the applied adhesive and then by curing the adhesive through a heat treatment; and

superposing the electrically insulating substrate on the first circuit board to which the electrolytic capacitor is fixed, followed by heating and pressurization, so as to form an electrically insulating layer within which the electrolytic capacitor is disposed,

in which the electrolytic capacitor is an electrolytic capacitor comprising:

a valve metal element for an anode including a capacitor forming part and an electrode lead part;

a dielectric oxide film provided on a surface of the valve metal element for an anode;

a solid electrolyte layer provided on the dielectric oxide film; and

a charge collecting element for a cathode provided on the solid electrolyte layer,

wherein at least one through hole is formed in the electrode lead part of the valve metal element for an anode to expose core of the valve metal element outside.

42. (Withdrawn) The method according to claim 41, wherein the electrically insulating layer constituting the first circuit board and the electrically insulating substrate are formed of the same thermosetting resin composition.

43. (Withdrawn) A method producing a circuit board with a built-in capacitor comprising:

preparing an electrically conductive adhesive containing an electrically conductive filler and an uncured thermosetting resin;

preparing a sheet member formed of a thermosetting resin composition containing an uncured thermosetting resin and an inorganic filler, as an electrically insulating substrate;

applying the electrically conductive adhesive to a predetermined position of a surface of a metal foil;

fixing an electrolytic capacitor to the metal foil by disposing the capacitor on the applied adhesive and then by curing the adhesive through a heat treatment;

superposing the electrically insulating substrate on the metal foil to which the electrolytic capacitor is fixed, followed by heating and pressurization, so as to form an electrically insulating layer within which the capacitor is disposed, and

patterning the metal foil so as to form a wiring layer in a predetermined wiring pattern,

in which the electrolytic capacitor is an electrolytic capacitor comprising:

a valve metal element for an anode including a capacitor forming part and an electrode lead part;

a dielectric oxide film provided on a surface of the valve metal element for an anode;

a solid electrolyte layer provided on the dielectric oxide film; and

a charge collecting element for a cathode provided on the solid electrolyte layer,

wherein at least one through hole is formed in the electrode lead part of the valve metal element for an anode to expose core of the valve metal element outside.

44. (Withdrawn) The method according to claim 42, wherein the metal foil is a copper foil.

45. (Withdrawn) A method producing a circuit board with a built-in capacitor comprising:

forming a wiring layer in a predetermined wiring pattern on one surface of a releasable carrier;

preparing an electrically conductive adhesive containing an electrically conductive filler and an uncured thermosetting resin;

preparing a sheet member formed of a thermosetting resin composition containing an uncured thermosetting resin and an inorganic filler, as an electrically insulating substrate;

applying the electrically conductive adhesive to a predetermined position of a surface of the wiring layer;

fixing an electrolytic capacitor to the releasable carrier by disposing the capacitor on the applied adhesive and then by curing the adhesive through a heat treatment;

superposing the electrically insulating substrate on the releasable carrier to which the electrolytic capacitor is fixed, followed by heating and pressurization, so as to form an electrically insulating layer within which the electrolytic capacitor is disposed; and

exposing the wiring layer by removing the releasable carrier,

in which the electrolytic capacitor is an electrolytic capacitor comprising:

a valve metal element for an anode including a capacitor forming part and an electrode lead part;

a dielectric oxide film provided on a surface of the valve metal element for an anode;

a solid electrolyte layer provided on the dielectric oxide film; and

a charge collecting element for a cathode provided on the solid electrolyte layer,

wherein at least one through hole is formed in the electrode lead part of the valve metal element for an anode to expose core of the valve metal element outside.

46. (Withdrawn) The method according to claim 41, wherein as the electrically insulating substrate, an electrically insulating substrate wherein one or more through holes are formed in a predetermined position and the hole(s) is filled with a via paste containing electrically conductive powder and an uncured thermosetting resin is prepared, and an inner via(s) is formed upon forming the electrically insulating layer by the heating and pressurization.

47. (Withdrawn) The method according to claim 43, wherein as the electrically insulating substrate, an electrically insulating substrate wherein one or more through holes are formed in a predetermined position and the hole(s) is filled with a via paste containing electrically conductive powder and an uncured thermosetting resin is prepared, and an inner via(s) is formed upon forming the electrically insulating layer by the heating and pressurization.

48. (Withdrawn) The method according to claim 45, wherein as the electrically insulating substrate, an electrically insulating substrate wherein one or more through holes are formed in a predetermined position and the hole(s) is filled with a via paste containing electrically conductive powder and an uncured thermosetting resin is prepared, and an inner via(s) is formed upon forming the electrically insulating layer by the heating and pressurization.

49. (Withdrawn) The method according to claim 46, wherein the electrolytic capacitor is disposed within the electrically insulating layer so that the inner via in the electrically insulating layer contacts with the electrode lead part of the valve metal element for an anode of the electrolytic capacitor.

50. (Withdrawn) The method according to claim 47, wherein the electrolytic capacitor is disposed within the electrically insulating layer so that the inner via in the electrically insulating layer contacts with the electrode lead part of the valve metal element for an anode of the electrolytic capacitor.

51. (Withdrawn) The method according to claim 48, wherein the electrolytic capacitor is disposed within the electrically insulating layer so that the inner via in the electrically insulating layer contacts with the electrode lead part of the valve metal element for an anode of the electrolytic capacitor.